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A TROCAR WHICH BOTH CLAMPS AND EMPTIES A
CYST WITHOUT PERMITTING THE ESCAPE OF
FLUID INTO THE ABDOMINAL CAVITY.*

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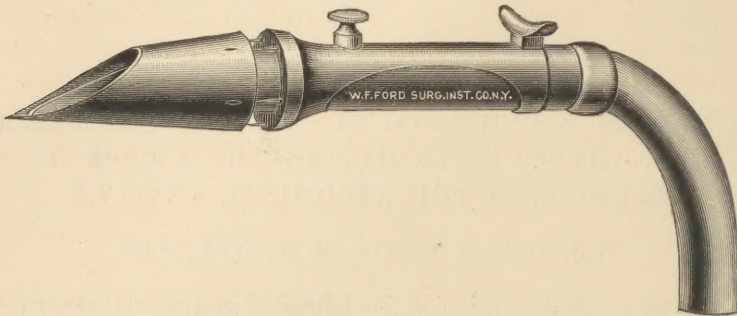
It is an established principle in abdominal surgery that every precaution should be taken to prevent the contents of cysts from getting into the peritoneal cavity. But, however careful the operator may be in using any of the trocars generally employed, he sometimes finds it impossible to empty tumors without allowing a considerable amount of their contents to escape into the abdomen. These fluids are, of course, not all poisonous; many are innocent but, as it is not possible always to tell positively their true character until they are submitted to a microscopic examination, we should consider them all dangerous and use every means available to prevent them from coming in contact with the peritonæum or wound. Operators frequently base their opinion of the nature of fluids upon their color and general appearance; this is as uncertain as it is unscientific. Such a method can only add to the danger of an operation and lessen the chances of recovery.

An instrument, then, that can drain a cyst without allowing its contents to escape into the abdomen or over the wound, must necessarily facilitate the operation, lessen its dangers and put at rest the question of irrigating the peritoneal cavity. With a thorough understanding of the instrument presented and a little practice on distended bladders before it is used on the living subject, one can perfectly control a cyst and its contents.

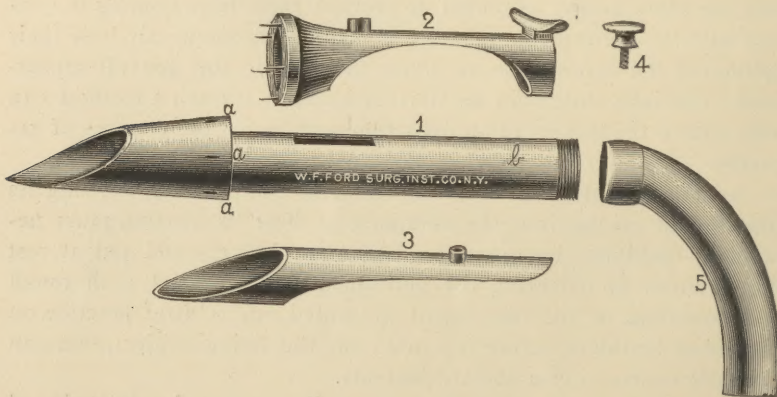
It consists of five distinct parts, easily separated, adjusted and cleansed. No. 1 represents the cannula, the cutting end of which is shaped like an arrowhead, the base of the arrowhead being one fourth of an inch greater in diameter than the cannula proper. As this end

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is forced through the tumor wall the tissues tighten around it until they meet points *a a a*, where tension is suddenly relieved and the tissues by their own elasticity encircle the cannula or tube *b* at the



base of the arrowhead. No. 2 is the clamp. It is armed with several stout pins and moves upon the tube *b*. As soon as the tissues have passed points *a a a* they are anchored by the clamp, being shoved against the base of the arrowhead. No. 3 is the shield which protects the cutting point of the instrument when it is closed. It works within the cannula and is connected to No. 2 by a small screw, No. 4. No. 5 is a curved tube which forms the handle of the instrument; it is made



detachable, so as to allow No. 2 to slide off tube *b* when it is desired to separate the instrument into its parts for the purpose of cleaning them.

In order that the instrument may work properly, it is necessary that there be a certain amount of resistance offered and for a certain

length of time. It is best adapted, therefore, to large tumors. With small cysts the clamp feature can not be used to advantage, as the tumor will be emptied before the arrowhead can be forced beyond the wall; with such cases it should be converted into a dull trocar immediately after puncturing. As a dull trocar it prevents the escape of fluid to a considerable extent, but the tumor, not being grasped by the instrument, will have to be lifted out of the abdomen in the usual way. When the fluid is of a very thick consistence, as often occurs in multilocular cysts, the instrument can answer only the purpose of a clamp.

The trocar should never be plunged suddenly beyond the base of the arrowhead; but by a gentle and firm pressure, accompanied by a slight rotary motion, it should be forced just far enough to allow the tissues to slide over points *a a a*. A thick and healthy portion of tumor wall should always be selected if possible to operate on, as a thin or diseased portion will not stand the necessary strain.

The following is a brief history of a case operated on one year ago by Dr. H. C. Coe of this city. I report it, with his consent, to illustrate the fact that we are not always certain of the nature of the fluid with which we are dealing:

Mrs. S., examined January 11, 1893. Diagnosis: a large, simple, thin-walled ovarian cyst. She presented only symptoms which are usually occasioned by such tumors. On January 21st the abdomen was opened and tumor removed. Owing to the inefficiency of the trocar used, a considerable amount of the contents of the cyst escaped into the abdominal cavity. It was considered harmless, but as a precautionary measure the abdomen was thoroughly irrigated with boiled water at a temperature between 110° and 115°. Patient was put to bed in good condition; soon recovered consciousness and appeared unusually bright. Fifteen hours after operation, however, temperature, pulse and respiration began to rise. Symptoms became rapidly worse and patient died January 23d, thirty-nine hours after operation. Autopsy revealed most acute septic poisoning. The poison which occasioned such a violent and general condition must, it is evident, have come in contact with a considerable portion of the peritonæum and wound, and as the contents of the cyst did come in contact with an extensive peritoneal surface, and as this fluid was of a dark-brown color and somewhat suspicious in its appearance, we are almost justified, from these facts alone, in considering it the probable source of infection. It may be well to state in this connection that the usual precautions with respect to all articles and instruments used during

operation were taken. On examining the tumor sac after operation, there was found on its inner surface an area several inches in diameter which to all appearances was necrotic in nature. This suspicion was afterward substantiated by the pathological report and the source of poisoning determined.

Here, then, we have positive proof that tumor walls sometimes undergo necrosis, and to such a degree as to render the contents violently poisonous, without occasioning symptoms which would even cause a suspicion of the existing condition.

